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DICTIONARY FILE UPDATES: 9 AUG 2006 HIGHEST RN 900096-56-2

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=> d que sta l13

L11 STR

P---C---C---P
1 2 3 4

NODE ATTRIBUTES:

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NSPEC IS R AT 4
DEFAULT MLEVEL IS ATOM
DEFAULT ECLEVEL IS LIMITED

GRAPH ATTRIBUTES:

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STEREO ATTRIBUTES: NONE

L13 179 SEA FILE=REGISTRY SSS FUL L11

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SEARCH TIME: 00.00.01

179 ANSWERS

=> b hcap

FILE 'HCAPLUS' ENTERED AT 16:11:09 ON 10 AUG 2006
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 FILE LAST UPDATED: 9 Aug 2006 (20060809/ED)

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This file contains CAS Registry Numbers for easy and accurate
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L33 ANSWER 1 OF 3 HCAPLUS COPYRIGHT 2006 ACS on STN
 AN 2004:287803 HCAPLUS
 DN 140:310272
 ED Entered STN: 08 Apr 2004
 TI Process for the hydroformylation of an ethylenically unsaturated compound
 IN Drent, Eit; Van Ginkel, Roelof; Jager, Willem
 Wabe
 PA Shell Internationale Research Maatschappij B.V., Neth.
 SO PCT Int. Appl., 28 pp.
 CODEN: PIXXD2
 DT Patent
 LA English
 IC ICM B01J-0031/24
 ICS B01J-0027/08; B01J-0031/02; C07F-0009/6568; C07F-0015/00;
 C07C-0045/50
 CC 67-1 (Catalysis, Reaction Kinetics, and Inorganic Reaction Mechanisms)
 Section cross-reference(s): 23

FAN.CNT 1

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---------------------|--|----------|-----------------|--------------|
| WO2004028689 | A2 | 20040408 | 2003WO-EP50654 | 20030924 <-- |
| WO2004028689 | A3 | 20040729 | | |
| W: | AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW | | | |
| RW: | GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG | | | |
| CA---2500095 | AA | 20040408 | 2003CA-2500095 | 20030924 <-- |
| AU2003299066 | A1 | 20040419 | 2003AU-0299066 | 20030924 <-- |
| US2004167362 | A1 | 20040826 | 2003US-0670105 | 20030924 <-- |
| EP---1542798 | A2 | 20050622 | 2003EP-0798198 | 20030924 <-- |
| R: | AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, SK | | | |
| CN---1684769 | A | 20051019 | 2003CN-0823006 | 20030924 <-- |
| JP2006500415 | T2 | 20060105 | 2004JP-0539074 | 20030924 <-- |
| ZA2005002080 | A | 20050912 | 2005ZA-0002080 | 20050311 <-- |
| PRAI 2002EP-0256696 | A | 20020926 | <-- | |
| 2003WO-EP50654 | W | 20030924 | | |

CLASS

| PATENT NO. | CLASS | PATENT FAMILY CLASSIFICATION CODES |
|---------------|-------|--|
| WO 2004028689 | ICM | B01J-0031/24 |
| | ICS | B01J-0027/08; B01J-0031/02; C07F-0009/6568; C07F-0015/00; C07C-0045/50 |
| | IPCI | B01J0031-24 [ICM,7]; B01J0031-16 [ICM,7,C*]; B01J0027-08 [ICS,7]; B01J0027-06 [ICS,7,C*]; B01J0031-02 [ICS,7]; C07F0009-6568 [ICS,7]; C07F0009-00 [ICS,7,C*]; C07F0015-00 [ICS,7]; C07C0045-50 [ICS,7]; C07C0045-00 [ICS,7,C*] |
| | IPCR | B01J0031-16 [I,C*]; B01J0031-24 [I,A]; B01J0031-26 |

[N,C*]; B01J0031-28 [N,A]; C07C0045-00 [I,C*];
C07C0045-50 [I,A]; C07C0067-00 [I,C*]; C07C0067-347
[I,A]; C07F0009-00 [I,C*]; C07F0009-6568 [I,A]
ECLA B01J031/24; C07C045/50; C07C067/347+69/716;
C07C067/347+69/675; C07F009/6568C
CA---2500095 IPCI B01J0031-24 [ICM,7]; B01J0031-16 [ICM,7,C*];
C07F0015-00 [ICS,7]; B01J0031-02 [ICS,7]; B01J0027-08
[ICS,7]; B01J0027-06 [ICS,7,C*]; C07C0045-50 [ICS,7];
C07C0045-00 [ICS,7,C*]; C07F0009-6568 [ICS,7];
C07F0009-00 [ICS,7,C*]
IPCR B01J0031-16 [I,C*]; B01J0031-24 [I,A]; B01J0031-26
[N,C*]; B01J0031-28 [N,A]; C07C0045-00 [I,C*];
C07C0045-50 [I,A]; C07C0067-00 [I,C*]; C07C0067-347
[I,A]; C07F0009-00 [I,C*]; C07F0009-6568 [I,A]
ECLA B01J031/24; C07C045/50; C07C067/347+69/675;
C07C067/347+69/716; C07F009/6568C
AU2003299066 IPCI B01J0031-24 [ICM,7]; B01J0031-16 [ICM,7,C*];
B01J0027-08 [ICS,7]; B01J0027-06 [ICS,7,C*];
B01J0031-02 [ICS,7]; C07F0009-6568 [ICS,7]; C07F0009-00
[ICS,7,C*]; C07F0015-00 [ICS,7]; C07C0045-50 [ICS,7];
C07C0045-00 [ICS,7,C*]
IPCR B01J0031-16 [I,C*]; B01J0031-24 [I,A]; B01J0031-26
[N,C*]; B01J0031-28 [N,A]; C07C0045-00 [I,C*];
C07C0045-50 [I,A]; C07C0067-00 [I,C*]; C07C0067-347
[I,A]; C07F0009-00 [I,C*]; C07F0009-6568 [I,A]
US2004167362 IPCI C07C0045-49 [ICM,7]; C07C0045-00 [ICM,7,C*]
IPCR B01J0031-16 [I,C*]; B01J0031-24 [I,A]; B01J0031-26
[N,C*]; B01J0031-28 [N,A]; C07C0045-00 [I,C*];
C07C0045-50 [I,A]; C07C0067-00 [I,C*]; C07C0067-347
[I,A]; C07F0009-00 [I,C*]; C07F0009-6568 [I,A]
NCL 568/454.000
ECLA B01J031/24; C07C045/50; C07C067/347+69/675;
C07C067/347+69/716; C07F009/6568C
EP---1542798 IPCI B01J0031-24 [ICM,7]; B01J0031-16 [ICM,7,C*];
B01J0027-08 [ICS,7]; B01J0027-06 [ICS,7,C*];
B01J0031-02 [ICS,7]; C07F0009-6568 [ICS,7]; C07F0009-00
[ICS,7,C*]; C07F0015-00 [ICS,7]; C07C0045-50 [ICS,7];
C07C0045-00 [ICS,7,C*]
IPCR B01J0027-06 [I,C*]; B01J0027-08 [I,A]; B01J0031-02
[I,A]; B01J0031-02 [I,C*]; B01J0031-16 [I,C*];
B01J0031-24 [I,A]; C07C0045-00 [I,C*]; C07C0045-50
[I,A]; C07F0009-00 [I,C*]; C07F0009-6568 [I,A];
C07F0015-00 [I,A]; C07F0015-00 [I,C*]
CN---1684769 IPCI B01J0031-24 [ICM,7]; B01J0031-16 [ICM,7,C*];
B01J0027-08 [ICS,7]; B01J0027-06 [ICS,7,C*];
B01J0031-02 [ICS,7]; C07F0009-6568 [ICS,7]; C07F0009-00
[ICS,7,C*]; C07F0015-00 [ICS,7]; C07C0045-50 [ICS,7];
C07C0045-00 [ICS,7,C*]
IPCR B01J0031-16 [I,C*]; B01J0031-24 [I,A]; B01J0031-26
[N,C*]; B01J0031-28 [N,A]; C07C0045-00 [I,C*];
C07C0045-50 [I,A]; C07C0067-00 [I,C*]; C07C0067-347
[I,A]; C07F0009-00 [I,C*]; C07F0009-6568 [I,A]
JP2006500415 IPCI C07C0067-38 [I,A]; C07C0067-00 [I,C*]; B01J0031-24
[I,A]; B01J0031-16 [I,C*]; C07C0069-675 [I,A];
C07C0069-00 [I,C*]; C07B0061-00 [N,A]
FTERM 4G169/AA06; 4G169/AA08; 4G169/BA27A; 4G169/BA27B;
4G169/BC69A; 4G169/BC72A; 4G169/BC72B; 4G169/BE26A;
4G169/BE26B; 4G169/BE37A; 4G169/BE37B; 4G169/CB51;
4G169/FA01; 4H006/AA02; 4H006/AC48; 4H006/BA25;
4H006/BA35; 4H006/BA44; 4H006/BA47; 4H006/BA81;
4H006/BE20; 4H006/BE40; 4H006/BN10; 4H006/BT12;
4H039/CC30; 4H039/CL45
ZA2005002080 IPCI B01J [ICS,7]; C07C [ICS,7]; C07F [ICS,7]
IPCR B01J0031-16 [I,C*]; B01J0031-26 [N,C*]; C07C0045-00
[I,C*]; C07C0067-00 [I,C*]; C07F0009-00 [I,C*];
B01J0031-24 [I,A]; B01J0031-28 [N,A]; C07C0045-50

[I,A]; C07C0067-347 [I,A]; C07F0009-6568 [I,A]
 ECLA B01J031/24; C07C045/50; C07C067/347+69/675;
 C07C067/347+69/716; C07F009/6568C

OS MARPAT 140:310272

AB The present invention relates to a process for the hydroformylation of an optionally substituted ethylenically unsatd. compound by reaction thereof with carbon monoxide and hydrogen in the presence of a specific catalyst system. The specific catalyst system comprises (A) a source of group VIII metal cations, (B) a diphosphine ligand having the general formula X_1RX_2 , (C) an acid with $pK_a < 3$, measured in an aqueous solution at 18° or a salt derived thereof, and (D) a source of halide anions, wherein X_1 , X_2 = independently an optionally substituted cyclic group with ≥ 5 ring atoms, of which one is a phosphorus atom, and R = a bivalent optionally substituted bridging group, connected to each phosphorus atom by a sp^2 hybridized carbon atom. Furthermore some specific bidentate diphosphines used in this process are described. Thus, 1,2-dibromobenzene 9.44, 1,4-diazabicyclo[2,2,2]octane 22.4, 9-phosphabicyclo[3.3.1]nonane 13.0, and tetrakis(triphenylphosphine)palladium 2.32 g were heated at 140° to give 7.10 g (yield 50%) 1,2-bis(9-phosphabicyclo[3.3.1]nonyl)benzene, 0.40 mmol of which was mixed with methane sulfonic acid 1.0, hydrochloric acid 0.20, and palladium acetate 0.25 mmol, and 20 mL 1-octene and heated at 120° for 5 h under 20 bar carbon monoxide and 40 bar hydrogen to give an alkanol product >99, a linear alkanol product 68, and a hydrogenation product <1%.

ST process hydroformylation ethylenically unsatd compd;
 bisphosphabicyclononylbenzene ligand palladium acetate catalyst octene hydroformylation

IT Alkenes, reactions

RL: RCT (Reactant); RACT (Reactant or reagent)
 (C11-12; hydroformylation of ethylenically unsatd. compds.)

IT Ligands

RL: CAT (Catalyst use); USES (Uses)
 (bidentate, diphosphines, hydroformylation catalyst
 ligand; hydroformylation of ethylenically unsatd. compds.)

IT Hydroformylation

(hydroformylation of ethylenically unsatd. compds.)

IT Group VIII elements

RL: CAT (Catalyst use); USES (Uses)
 (hydroformylation of ethylenically unsatd. compds.)

IT Catalysts

(hydroformylation; hydroformylation of ethylenically unsatd. compds.)

IT 676992-18-0 676992-19-1

RL: CAT (Catalyst use); USES (Uses)
 (hydroformylation catalyst ligand; hydroformylation of ethylenically
 unsatd. compds.)

IT 407578-79-4P, 9-Phosphabicyclo[3.3.1]nonane, 9,9'-(1,2-
 phenylene)bis- 676992-15-7P 676992-16-8P

RL: CAT (Catalyst use); IMF (Industrial manufacture); PREP (Preparation);
 USES (Uses)
 (hydroformylation catalyst ligand; hydroformylation of ethylenically
 unsatd. compds.)

IT 3375-31-3

RL: CAT (Catalyst use); USES (Uses)
 (hydroformylation of ethylenically unsatd. compds.)

IT 4547-43-7P, Hexanoic acid, 6-hydroxy-, methyl ester 167707-57-5P,
 Pentanoic acid, 5-hydroxy-4-methyl-, methyl ester 676992-17-9P

RL: IMF (Industrial manufacture); PREP (Preparation)
 (hydroformylation of ethylenically unsatd. compds.)

IT 111-66-0, 1-Octene 630-08-0, Carbon monoxide, reactions
 818-59-7 1333-74-0, Hydrogen, reactions

RL: RCT (Reactant); RACT (Reactant or reagent)
 (hydroformylation of ethylenically unsatd. compds.)

IT 583-53-9, 1,2-Dibromobenzene 3141-26-2, 3,4-Dibromothiophene
 13887-02-0, 9-Phosphabicyclo[3.3.1]nonane 75415-78-0,
 1,2-Dibromocyclopentene

RL: RCT (Reactant); RACT (Reactant or reagent)

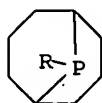
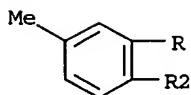
(reactant in hydroformylation catalyst ligand preparation; hydroformylation of ethylenically unsatd. compds.)

IT 676992-18-0

RL: RCT (Reactant); RACT (Reactant or reagent)
(hydroformylation catalyst ligand; hydroformylation of ethylenically unsatd. compds.)

RN 676992-18-0 HCAPLUS

CN 9-Phosphabicyclo[3.3.1]nonane, 9,9'-(4-methyl-1,2-phenylene)bis- (9CI)
(CA INDEX NAME)



L33 ANSWER 2 OF 3 HCAPLUS COPYRIGHT 2006 ACS on STN

AN 2002:295834 HCAPLUS

DN 137:108974

ED Entered STN: 21 Apr 2002

TI Teaching a palladium polymerization catalyst to mono-oxygenate olefins

AU Drent, E.; Mul, W. P.; Budzelaar, P. H. M.

CS Shell Research and Technology Centre, Amsterdam, Amsterdam, Neth.

SO Comments on Inorganic Chemistry (2002), 23(2), 127-147

CODEN: COICDZ; ISSN: 0260-3594

PB Taylor & Francis Ltd.

DT Journal

LA English

CC 22-7 (Physical Organic Chemistry)

Section cross-reference(s): 51, 67

OS CASREACT 137:108974

AB Catalyst systems consisting of a palladium(II) diphosphine complex with weakly or non-coordinating counterions are efficient catalysts for the hydrocarbonylation of olefins. With these catalyst systems, the oxo-synthesis can be fully exploited to produce, at will, aldehydes/alcs. by hydroformylation or monoketones by hydro-acylation of olefins. The reactions described here constitute the first examples of selective formation of ketones by hydrocarbonylation of higher olefins and the first examples of Pd catalyzed hydroformylation of olefins. Variation of ligand, anion and/or solvent can be used to steer the reaction selectively towards aldehydes/ alcs., ketones or oligoketones. Non-coordinating anions and arylphosphine ligands produce primarily (oligo)ketones; increasing ligand basicity shifts selectivity towards monoketones, while increasing ligand basicity and/or increasing anion coordination strength leads to high selectivity for hydroformylation products, aldehydes and alcs. For the mechanisms of the aldehyde-producing step, we propose protonation of Pd(II)-acyl intermediates, assisted by the coordination of the anion, followed by reductive elimination of the aldehyde and heterolytic dihydrogen cleavage. For selective saturated monoketone formation we propose protonation at the Pd(II)-alkyl stage, now assisted by

APPLICANT

chelating carbonyl coordination followed by reductive elimination of the ketone and heterolytic dihydrogen cleavage. Unsatd. ketone formation involves β -hydride elimination from the same Pd(II)-alkyl intermediates.

ST olefin hydrocarbonylation hydroformylation palladium catalyst

IT Ligands

RL: CAT (Catalyst use); USES (Uses)

(bidentate phosphines; hydrocarbonylation of olefins using catalyst systems consisting of a palladium(II) diphosphine complex with weakly or non-coordinating counterions)

IT Alcohols, preparation

RL: SPN (Synthetic preparation); PREP (Preparation)

(formation under hydroformylation conditions; hydrocarbonylation of olefins using catalyst systems consisting of a palladium(II) diphosphine complex with weakly or non-coordinating counterions)

IT Addition reaction

Hydroaddition reaction catalysts

(hydroacylation; hydrocarbonylation of olefins using catalyst systems consisting of a palladium(II) diphosphine complex with weakly or non-coordinating counterions)

IT Hydroformylation

Hydroformylation catalysts

Regiochemistry

Solvent effect

(hydrocarbonylation of olefins using catalyst systems consisting of a palladium(II) diphosphine complex with weakly or non-coordinating counterions)

IT Alkenes, reactions

RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); RCT (Reactant); PROC (Process); RACT (Reactant or reagent)

(hydrocarbonylation of olefins using catalyst systems consisting of a palladium(II) diphosphine complex with weakly or non-coordinating counterions)

IT Aldehydes, preparation

Ketones, preparation

RL: SPN (Synthetic preparation); PREP (Preparation)

(hydrocarbonylation of olefins using catalyst systems consisting of a palladium(II) diphosphine complex with weakly or non-coordinating counterions)

IT Chemoselectivity

(hydroformylation vs. hydroacylation; hydrocarbonylation of olefins using catalyst systems consisting of a palladium(II) diphosphine complex with weakly or non-coordinating counterions)

IT Anions

(ligand/anion effects on catalysis; hydrocarbonylation of olefins using catalyst systems consisting of a palladium(II) diphosphine complex with weakly or non-coordinating counterions)

IT Steric effects

(of phosphine ligand; hydrocarbonylation of olefins using catalyst systems consisting of a palladium(II) diphosphine complex with weakly or non-coordinating counterions)

IT Carbonylation

Carbonylation catalysts

(reductive; hydrocarbonylation of olefins using catalyst systems consisting of a palladium(II) diphosphine complex with weakly or non-coordinating counterions)

IT Synthesis gas

(selective production of ketones or aldehydes at will from olefins and syngas; hydrocarbonylation of olefins using catalyst systems consisting of a palladium(II) diphosphine complex with weakly or non-coordinating counterions)

IT Ketones, preparation

RL: SPN (Synthetic preparation); PREP (Preparation)

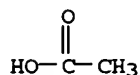
(α,β -unsatd.; hydrocarbonylation of olefins using catalyst systems consisting of a palladium(II) diphosphine complex with weakly

- or non-coordinating counterions)
- IT 76-05-1, Trifluoroacetic acid, uses 104-15-4, p-Toluenesulfonic acid, uses 1493-13-6, Trifluoromethanesulfonic acid
RL: CAT (Catalyst use); USES (Uses)
(anion precursor; hydrocarbonylation of olefins using catalyst systems consisting of a palladium(II) diphosphine complex with weakly or non-coordinating counterions)
- IT 3375-31-3, Palladium diacetate
RL: CAT (Catalyst use); USES (Uses)
(catalyst precursor; hydrocarbonylation of olefins using catalyst systems consisting of a palladium(II) diphosphine complex with weakly or non-coordinating counterions)
- IT 78-84-2P, Isobutyraldehyde 7786-29-0P, α -Methyloctanal 27644-47-9P, α -Propylhexanal 27649-40-7P, α -Ethylheptanal
RL: BYP (Byproduct); PREP (Preparation)
(hydrocarbonylation of olefins using catalyst systems consisting of a palladium(II) diphosphine complex with weakly or non-coordinating counterions)
- IT 111-66-0, 1-Octene 115-07-1, Propene, reactions
RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); RCT (Reactant); PROC (Process); RACT (Reactant or reagent)
(hydrocarbonylation of olefins using catalyst systems consisting of a palladium(II) diphosphine complex with weakly or non-coordinating counterions)
- IT 123-72-8P, Butanal 124-19-6P, Nonanal 7379-12-6P, 2-Methyl-3-hexanone 53252-19-0P, 2-Methyl-4-hexen-3-one 62834-80-4P, 2-Methyl-1-hexen-3-one
RL: SPN (Synthetic preparation); PREP (Preparation)
(hydrocarbonylation of olefins using catalyst systems consisting of a palladium(II) diphosphine complex with weakly or non-coordinating counterions)
- IT 6737-42-4, 1,3-Bis(diphenylphosphino)propane 121115-33-1, 1,3-Bis(di-tert-butylphosphino)propane 131285-34-2, 1,3-Bis(dibutylphosphino)propane 143540-35-6, 1,3-Bis(di-sec-butylphosphino)propane 159460-98-7, 1,2-Bis(di-sec-butylphosphino)ethane
RL: CAT (Catalyst use); USES (Uses)
(ligand; hydrocarbonylation of olefins using catalyst systems consisting of a palladium(II) diphosphine complex with weakly or non-coordinating counterions)
- RE.CNT 18 THERE ARE 18 CITED REFERENCES AVAILABLE FOR THIS RECORD
- RE
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 - (17) van Doorn, J; thesis, University of Amsterdam 1991
 - (18) Zuideveld, M; J Am Chem Soc 1998, V120, P7977 HCAPLUS
- IT 3375-31-3, Palladium diacetate
RL: CAT (Catalyst use); USES (Uses); RCT (Reactant); RACT (Reactant or reagent)
(catalyst precursor; hydrocarbonylation of olefins using catalyst systems consisting of a palladium(II) diphosphine complex with weakly

or non-coordinating counterions)

RN 3375-31-3 HCAPLUS

CN Acetic acid, palladium(2+) salt (8CI, 9CI) (CA INDEX NAME)



● 1/2 Pd(II)

L33 ANSWER (3 OF 3) HCAPLUS COPYRIGHT 2006 ACS on STN

AN 2001:851170 HCAPLUS

DN 135:371865

ED Entered STN: 23 Nov 2001

TI Bidentate ligands useful as carbonylation catalysts

IN Drent, Eit; Eberhard, Michael Rolf; Pringle, Paul Gerard

PA Shell Internationale Research Maatschappij BV, Neth.

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DT Patent

LA English

IC ICM C07F-0009/50

ICS C07F-0009/6568; C07F-0009/6571; C07C-0045/50; B01J-0031/24

CC 29-7 (Organometallic and Organometalloidal Compounds)

Section cross-reference(s): 45

FAN.CNT 1

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| PI WO2001087899 | A1 | 20011122 | 2001WO-EP05625 | 20010516 |
| W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM | | | | |
| RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG | | | | |
| CA---2408862 | AA | 20011122 | 2001CA-2408862 | 20010516 |
| EP---1282629 | A1 | 20030212 | 2001EP-0940491 | 20010516 |
| EP---1282629 | B1 | 20040204 | | |
| R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR | | | | |
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| 2001WO-EP05625 | W | 20010516 | | |

CLASS

| PATENT NO. | CLASS | PATENT FAMILY CLASSIFICATION CODES |
|---------------|-------|---|
| WO 2001087899 | ICM | C07F-0009/50 |
| | ICS | C07F-0009/6568; C07F-0009/6571; C07C-0045/50; B01J-0031/24 |
| | IPCI | C07F0009-50 [ICM,7]; C07F0009-6568 [ICS,7]; C07F0009-6571 [ICS,7]; C07F0009-00 [ICS,7,C*]; C07C0045-50 [ICS,7]; C07C0045-00 [ICS,7,C*]; |

B01J0031-24 [ICS,7]; B01J0031-16 [ICS,7,C*]
 IPCR C07C0045-00 [I,C*]; C07C0045-50 [I,A]; C07C0067-00 [I,C*]; C07C0067-38 [I,A]; C07F0009-00 [I,C*]; C07F0009-50 [I,A]; C07F0009-6568 [I,A]; C07F0009-6571 [I,A]
 ECLA C07C045/50; C07F009/6568C; C07F009/6571L; C07C067/38+69/24; C07C067/38+69/54; C07F009/50A6
 CA---2408862 IPCI C07F0009-50 [ICM,7]; B01J0031-24 [ICS,7]; B01J0031-16 [ICS,7,C*]; C07C0045-50 [ICS,7]; C07C0045-00 [ICS,7,C*]; C07F0009-6568 [ICS,7]; C07F0009-6571 [ICS,7]; C07F0009-00 [ICS,7,C*]
 EP---1282629 IPCI C07F0009-50 [ICM,7]; C07F0009-6568 [ICS,7]; C07F0009-6571 [ICS,7]; C07F0009-00 [ICS,7,C*]; C07C0045-50 [ICS,7]; C07C0045-00 [ICS,7,C*]; B01J0031-24 [ICS,7]; B01J0031-16 [ICS,7,C*]
 IPCR B01J0031-16 [I,C*]; B01J0031-24 [I,A]; C07C0045-00 [I,C*]; C07C0045-50 [I,A]; C07F0009-00 [I,C*]; C07F0009-50 [I,A]; C07F0009-6568 [I,A]; C07F0009-6571 [I,A]
 BR2001010882 IPCI C07F0009-50 [ICM,7]; C07F0009-6568 [ICS,7]; C07F0009-6571 [ICS,7]; C07F0009-00 [ICS,7,C*]; C07C0045-50 [ICS,7]; C07C0045-00 [ICS,7,C*]; B01J0031-24 [ICS,7]; B01J0031-16 [ICS,7,C*]
 IPCR C07C0045-00 [I,C*]; C07C0045-50 [I,A]; C07C0067-00 [I,C*]; C07C0067-38 [I,A]; C07F0009-00 [I,C*]; C07F0009-50 [I,A]; C07F0009-6568 [I,A]; C07F0009-6571 [I,A]
 JP2003533534 IPCI C07F0009-50 [ICM,7]; C07F0009-00 [ICM,7,C*]; B01J0031-26 [ICS,7]; C07C0029-16 [ICS,7]; C07C0029-00 [ICS,7,C*]; C07C0031-02 [ICS,7]; C07C0031-00 [ICS,7,C*]; C07C0045-50 [ICS,7]; C07C0045-00 [ICS,7,C*]; C07C0047-02 [ICS,7]; C07B0061-00 [ICS,7]
 IPCR C07C0045-00 [I,C*]; C07C0045-50 [I,A]; C07C0067-00 [I,C*]; C07C0067-38 [I,A]; C07F0009-00 [I,C*]; C07F0009-50 [I,A]; C07F0009-6568 [I,A]; C07F0009-6571 [I,A]
 AT----258936 IPCI C07F0009-50 [ICM,7]; C07F0009-6568 [ICS,7]; C07F0009-6571 [ICS,7]; C07F0009-00 [ICS,7,C*]; C07C0045-50 [ICS,7]; C07C0045-00 [ICS,7,C*]; B01J0031-24 [ICS,7]; B01J0031-16 [ICS,7,C*]
 ES---2210170 IPCI C07F0009-50 [ICM,7]; C07F0009-6568 [ICS,7]; C07F0009-6571 [ICS,7]; C07F0009-00 [ICS,7,C*]; C07C0045-50 [ICS,7]; C07C0045-00 [ICS,7,C*]; B01J0031-24 [ICS,7]; B01J0031-16 [ICS,7,C*]
 US2002016484 IPCI C07F0009-72 [ICM,7]; C07F0009-90 [ICS,7]; C07F0009-28 [ICS,7]; C07F0009-00 [ICS,7,C*]
 IPCR C07C0045-00 [I,C*]; C07C0045-50 [I,A]; C07C0067-00 [I,C*]; C07C0067-38 [I,A]; C07F0009-00 [I,C*]; C07F0009-50 [I,A]; C07F0009-6568 [I,A]; C07F0009-6571 [I,A]
 NCL 556/070.000
 ECLA C07C045/50; C07C067/38+69/54; C07C067/38+69/24; C07F009/50A6; C07F009/6568C; C07F009/6571L
 ZA2002009309 IPCI B01J [ICM,7]; C07C [ICS,7]; C07F [ICS,7]
 OS CASREACT 135:371865; MARPAT 135:371865
 AB The invention describes bidentate ligands of formula R1R2M1-R-M2R3R4, wherein M1 and M2 are independently P, As or Sb; R1, R2, R3 and R4 independently represent tertiary alkyl groups, or R1 and R2 together and/or R3 and R4 together represent an optionally substituted bivalent cycloaliph. group whereby the two free valencies are linked to M1 or M2, and R represents a bivalent aliphatic bridging group containing from 2 to 6 atoms in the bridge, which is substituted with two or more substituents. Use of such a catalyst system in a process for the carbonylation of optionally substituted alkenes and alkynes by reaction with carbon monoxide and a coreactant is described. Thus, propene is hydroformylated by pressurization with carbon monoxide and hydrogen in the presence of

platinum(II) acetylacetonate and meso (R,S) 2,3-bis(cyclooctylenephosphino)butane to give 99% n-butyraldehyde.

ST alkene hydroformylation platinum diphosphine cocatalyst; alkanol esterification platinum palladium diphosphine cocatalyst; platinum diphosphine carbonylation cocatalyst; palladium diphosphine carbonylation cocatalyst; aldehyde prepn; ester prepn

IT Alcohols, reactions
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (aliphatic; esterification of alkanols catalyzed by platinum or palladium diphosphine cocatalysts)

IT Ligands
 RL: CAT (Catalyst use); USES (Uses)
 (bidentate; carbonylation reactions of alkenes and alkanols catalyzed by platinum or palladium diphosphine cocatalysts)

IT Esterification catalysts
 (esterification of alkanols catalyzed by platinum or palladium diphosphine cocatalysts)

IT Hydroformylation catalysts
 (hydroformylation of alkenes catalyzed by platinum diphosphine cocatalysts)

IT Alkenes, reactions
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (hydroformylation of alkenes catalyzed by platinum diphosphine cocatalysts)

IT Esterification
 (of alkanols catalyzed by platinum or palladium diphosphine cocatalysts)

IT Hydroformylation
 (of alkenes catalyzed by platinum diphosphine cocatalysts)

IT 3375-31-3 15170-57-7, Platinum acetylacetonate 153280-11-6 374557-18-3
 RL: CAT (Catalyst use); USES (Uses)
 (carbonylation reactions of alkenes and alkanols catalyzed by platinum or palladium diphosphine cocatalysts)

IT 123-72-8P, n-Butyraldehyde 141-32-2P 590-01-2P
 RL: IMF (Industrial manufacture); SPN (Synthetic preparation); PREP (Preparation)
 (carbonylation reactions of alkenes and alkanols catalyzed by platinum or palladium diphosphine cocatalysts)

IT 71-36-3, Butanol, reactions 74-85-1, Ethene, reactions 74-86-2, Acetylene, reactions 79-09-4, Propionic acid, reactions 115-07-1, Propene, reactions
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (carbonylation reactions of alkenes and alkanols catalyzed by platinum or palladium diphosphine cocatalysts)

RE.CNT 5 THERE ARE 5 CITED REFERENCES AVAILABLE FOR THIS RECORD

RE

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(5) Shell Internationale Research Maatschappij BV; WO---9842717 A 1998 HCAPLUS

IT 3375-31-3
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (carbonylation reactions of alkenes and alkanols catalyzed by platinum or palladium diphosphine cocatalysts)

RN 3375-31-3 HCAPLUS

CN Acetic acid, palladium(2+) salt (8CI, 9CI) (CA INDEX NAME)